DOCUMENT RESUME

ED 411 311 TM 027 370

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TITLE An Economist's View of Educational Standards.
PUB DATE 1997-03-26
NOTE 18p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, March 24-28, 1997).
PUB TYPE Information Analyses (070) -- Opinion Papers (120) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; Costs; *Economic Factors; Education Work Relationship; Educational Attainment; Educational Improvement; Elementary Secondary Education; Equal Opportunities (Jobs); Performance Factors; *Predictive Validity; *Productivity; *Standards

ABSTRACT

Much of the contention for establishing national educational standards rests on the assumption that such standards are required for a productive labor force and for economic productivity. However, this assumption has not been subjected to rigorous economic analysis. This paper briefly examines the evidence that does exist that links existing and projected educational standards and economic productivity. By educational standards, the discussion refers to specific knowledge or analytical requirements expected of students at each level of the educational system. In this spirit, the paper addresses what is known about the predictive validity of test score performance for worker productivity. It also asks about the impact of the "new standards" on economic outcomes. It is concluded that present evidence on the link between educational standards and worker productivity is extremely weak relative to the assertions made on the connection. In addition, given the low predictive validities of available measures, there is a potential for reducing national economic efficiency and fairness in employment selection, the very opposite of what reformers intended. (Contains 23 references.) (SLD)

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AN ECONOMIST'S VIEW OF EDUCATIONAL STANDARDS

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Abstract: **An Economist's View of Educational Standards**

Henry M. Levin

Much of the contention for establishing national educational standards rests on the assumption that such standards are required for a productive labor force and for economic productivity. Strangely, this assumption has not been subjected to rigorous economic analysis. The purpose of this paper is to examine briefly what evidence does exist that links existing and projected educational standards and economic productivity. In this spirit the paper addresses what is known about the predictive validity of test score performance with worker productivity. It also asks how the "new standards" might impact on economic outcomes. It concludes that the present evidence on the link between educational standards and worker productivity is extremely weak relative to the assertions that are found on the subject.

H. M. Levin

AN ECONOMIST'S VIEW OF EDUCATIONAL STANDARDS

INTRODUCTION

One of the major arguments for establishing educational standards is to prepare students for productive roles in the labor force. In fact, the standards movement as a national policy mania dates largely from the publication of Nation at Risk in 1983 where it was implied that lax standards in American schools had led to a unilateral disarmament of the Nation in world economic competition (National Commission on Excellence in Education 1983). Presumably we needed to marshal a "world class" workforce for the ensuing battles, and the establishment and fulfillment of educational standards for all students represented the declaration for economic mobilization. Little was said about educational standards for cultivating citizenship in a democracy or for promoting healthy personal and social development. And, with the notable exception of Hirsch (1987), there was little attention devoted to worrying about standards for cultural knowledge and cohesion. It was the economic arguments that seemed to goad educators and politicians into action. In fact, it is notable that the most important national effort to establish educational standards is sponsored by an organization called The National Center on Education and the Economy.

I mention this at the outset because I believe that any fair reading of the recent history of educational standards will see an economic rationale as the most explicit contention. Yet, the specific connections between educational standards and economic outcomes has been the least analyzed aspect of standards. Rather it has been assumed that the rhetoric of investment in human resources and human capital can justify any set

of purported educational standards as leading to greater economic productivity. Even the more specific studies that have tried to set out categories of desirable worker traits for the future job market have limited themselves to broad strokes rather than specific and measurable standards (Secretary's Commission on Achieving Necessary Skills 1991, 1992; Marshall and Tucker 1992). In fact, the Panel on the Economics of Educational Reform, a group of economists specializing in the economics of education (of which I was a member) concluded that although the returns to investment in human capital are substantial, it was not able to identify specific educational outcomes that could explain workplace productivity (Hanushek 1994). As I will suggest in this presentation, there is a good reason for that, for almost nothing is known about the relation between specific standards and economic productivity, even in a static economy with unchanging technology, markets, organization, and incentives. Needless to say, the precise prediction of specific educational standards on economic performance in a future economy is even more obscure.

At this point it is important to be specific about what I am referring to as educational standards. In this piece, educational standards refer to specific knowledge or analytical requirements expected of students at each level of the educational system, properly measured by assessment instruments, so that they can be used as criteria for assessing the adequacy of an individual's educational preparation. Of course, implicit in this definition is that adequacy will be judged according to some external criteria, and I will limit those guidelines to the validity of educational standards for predicting the level of economic productivity of individuals who meet or do not meet the standards.

In this context, educational standards are viewed as more than just broad categories of desirable educational outcomes for students. For example, the Secretary's Commission on Achieving Necessary Skills (1991) has set out a range of broad goals which will be desirable to develop among students for the future workforce. These include: the identification, organization, planning, and allocation of resources; interpersonal skills including participation in teams; acquiring and using information; understanding complex inter-relationships from a systems perspective; and working with a variety of technologies. These dimensions and their details were derived from interviews and discussions with employers and workers as well as from analyses of "high productivity" workplaces. These surely are reasonable and have face validity in the sense that they seem to match up generally to work demands in certain workplaces. But, they are so broad that they invite many different interpretations and applications with regard to their precise dimensions, that is, what comprises their specific knowledge and behavioral components and how they might be measured. In large measure they are hortatory guidelines for preparing future workers rather than prescriptive guidelines. These seem more nearly comparable to the curriculum frameworks that have been set out in many states. In contrast, I will view educational standards as prescriptive in setting out more precise criteria and measures, usually test items, for establishing whether standards are satisfied, not whether the curriculum meets standards. That is, I will focus on the economic implications of whether students meet standards. It is this latter concept of educational standards which I will address.

Two decades ago I prepared a paper on this subject for the Journal of Educational Measurement (Levin 1978). The opportunity to write this paper allowed me to examine

whether the evidence and my interpretation of it had changed over the years. I am afraid that my conclusions today are similar to those of two decades ago. While both the discussion of standards, their formulation, and their measurement have become more sophisticated and enriched, there is no evidence that their predictive validity for workforce productivity has gained. There is a considerable accumulation of evidence that more education is tied to higher earnings and, by implication, productivity (Pierce and Welch 1996), but precious little that links specific achievements of education to economic outcomes.

PREDICTIVE VALIDITY

Basically, the economic importance of educational standards reduces to their predictive ability in explaining economic productivity in the workplace, both at individual and at societal levels. The difference between these is instructive. At the individual level the person who meets standards might learn new skills faster and more proficiently and might be able to do superior work and do a better job of allocating workplace resources. At the societal level, the general meeting of standards might provide better organizational arrangements and interactions among individuals and organizations so that economic productivity is enhanced beyond the individual. The notion that specific educational outcomes, as opposed to more years of schooling or more degrees, will increase productivity is not a new notion. Although it was not addressed or analyzed directly in the early work on human capital, there is the implicit assumption that higher productivity is tied to the increase in skills and knowledge that result from more schooling (Becker 1994). Since the most prevalent approach to measuring what has been learned is to use standardized achievement tests, the focus narrowed quickly to the predictive power of

such test results to explain differences in worker productivity as reflected in earnings and in supervisory ratings.

Predicting Earnings

To say the least, this literature has produced disappointing results when compared to expectations. Historically a one standard deviation difference in test scores, controlling for race, gender, educational level, and experience has been associated with about a 3-4 percent difference in earnings (Bishop 1989). We should bear in mind that no educational project has shown the ability to consistently deliver a one standard deviation improvement in test scores, so even this criterion of educational gains should be viewed as an overstatement of what educational policy can deliver. For example, the widely publicized study of Coleman and Hoffer (1987) which heralded the greater success of private schools over public ones found a typical difference in achievement among the seven test areas of about .06 standard deviations in favor of students in private schools.

A recent study has been heralded for showing that the relation between student achievement and earnings seems to be increasing. Using the test with the largest statistical relation with earnings, Murnane, Willett, and Levy (1995) found that between 1978 and 1986, the statistical impact of mathematics test scores on earnings had risen over the eight years. For males the apparent effect of a one standard deviation in test scores had increased from about a 3 percent difference in earnings to about 7.4 percent; for females the increase was from 8.5 percent to 15.5 percent. But, note that even when using the most "powerful" predictor of earnings, the apparent impact of test score increases is minuscule, especially when considering what educational policy has to offer on raising test scores for the population. For example, what if we used the Coleman and

Hoffer (1987) results on the achievement advantage of attending a private high school to predict the earnings advantage over public school graduates with their lower achievement scores? Using the 1986 estimates from Murnane, Willett, and Levy (1995), the private school male graduate would receive about 4 cents an hour more than the public school one for his higher test scores (the private school female, about 6-7 cents an hour). It is also important to note that males with test scores that were one standard deviation higher than the average in 1986 had earnings that were about one dollar an hour less than 1978 males with average test scores. Real wages had fallen considerably over this period, and even large improvements in test scores would not have recouped earnings.

The weak relation between test scores and adult earnings is replicated in virtually every study on the subject, including earlier studies as summarized in Levin (1978). Even among those at the bottom of the educational distribution this result holds. For example, Berlin and Sum (1988) found that each additional grade level completed was associated with four times as large a gain in earnings as an additional grade-equivalent of basic skills as measured by test scores (AFQT). And, completion of the last year of high school was associated with ten times the increase in annual earnings of an additional grade equivalent of test score gain.

Predicting Supervisory Ratings

Given the concern for making U.S. test scores comparable or superior to those of our primary economic competitors, the evidence tying test scores to such indicators of economic productivity as earnings yields only a weak result. But, to the degree that observers do not agree with neo-classical economic theory that earnings in a competitive

marketplace will mirror productivity, it is useful to go to other measures of productivity. The major alternative measure is that of supervisory ratings of worker performance.

The most prominent attempt to use test scores to predict job performance has been based upon the General Ability Test Battery (GATB) which the U.S. Employment Service has used to rank workers for prospective employers. GATB includes sub-tests of intelligence, verbal aptitude, and numerical aptitude as well as a range of other measures. But, the predictive validity of GATB with supervisory ratings of employees among different jobs is on the order of 0.25, even when adjusting for sampling error and reliability (Hartigan and Wigdor 1989) according to a National Research Council panel. That is, about 6 percent of the variance in supervisory ratings can be explained by differences in GATB scores, even though the U.S. Employment Service has used GATB results to rank order job candidates on predicted productivity to prospective employers. And, other tests also seem to perform in about this range in predicting supervisory ratings (Schmitt, Gooding, Noe and Kirsch 1984).

Even these simple correlations overstate the case because they do not take account of the fact that educational attainments are not controlled for in the validity studies that constitute the research base. That is, some of the observed correlation between the test scores and the measure of productivity is really due to their co-variance with the unmeasured impact of educational attainment on both measures.

It is interesting how these very modest correlations are used by some industrial psychologists to claim that the allocation of available persons to jobs by assigning applicants with the highest test scores first will raise economic output by hundreds of billion dollars (Levin 1989). First, they use predictive validities of .6 or greater, despite

the findings of the National Research Council study that a more appropriate value is about 0.25 (Hartigan and Wigdor 1989). Second, they assume a huge number of applicants for every job, across the ability range, without realizing that the unemployment rate would have to be about 90 percent to meet their condition. Third, they calculate the economic value of differences in supervisory ratings by assuming that work supervisors are able to provide accurate estimates of the economic value of performance among workers with different ratings, despite the fact that highly complex econometric and accounting studies are limited in calculating the economic impact of differences in worker activity and that few supervisors are privy to any of the underlying financial variables.

THE NEW STANDARDS

I highlight the paucity of evidence on the predictive validity of test scores on economic productivity, not because the new standard bearers are using test scores as the only criterion. However, the achievement scores have been the gold standard for measuring educational quality in the past, and they still have important advocates. For example, many advocates of standards continue to use the results of the National Assessment of Educational Progress (NAEP) or the various international studies of educational achievement as prime evidence for judging the economic preparedness of U.S. students (e.g. Bishop 1989). But, the new standards movement attempts to integrate curriculum content frameworks with authentic assessment of results (so-called performance standards that are measured by work products that are more realistic reflections of contexts and situations that students and adults will face) rather than just standardized achievement scores.

Before commenting on the assessment criteria as predictors of economic success, it is important to point out that I am impressed with the quality of the work on New Standards published by the National Center on Education and the Economy and the University of Pittsburgh. Their Performance Standards (New Standards 1997 a,b) is rich in ideas, applications, illustrations, student work samples, and commentaries. I have found them to be an extremely fertile source for discussions on curriculum, standards, and demonstrations of student proficiency. In this respect they can be a great asset to my own Accelerated Schools Project (Hopfenberg, Levin et al. 1993) and other school restructuring movements in contributing to the construction of powerful learning strategies. This is also the approach to using the new standards that is suggested by Darling Hammond (1994) who sees them in the context of "informing" the determination of local standards rather than adopting external ones. That is, they provide a basis for a highly informed discussion by empowered school communities that must set and implement their own goals. Even if a school decided to embark on adoption of these standards and their activities and assessments in their entirety, the challenge to implementation would be overwhelming. They are highly detailed and nuanced as they should be, serving—in my opinion—as a rich source of ideas for the planning, implementation, and assessment of curriculum and instruction by those who must deliver instruction. From my perspective this is a more appropriate role than their wholesale adoption in pristine form for all schools and teachers, an action that will more likely lead to mechanical obeisance than to thoughtful application.

The attraction of the new standards is that they seem to have high face validity with many of the goals that we have for our youngsters. For example, their applied

learning units address the goals set out by the SCANS reports (Secretary's Commission on Achieving Necessary Skills 1991, 1992). And, I believe that this is probably the best that can be done in using educational standards to address the economic productivity goals of schooling. That is, an evaluation of economic life and the workplace suggests certain useful attributes of workers for effective functioning. In our own ethnographic work, we have found dimensions that overlap with those of the SCANS report, and have attempted to translate these into educational activities and goals (Rumberger and Levin 1989). We believe that we have established face validity for these criteria, but not predictive validity in the traditional sense.

One reason that this seems to be a more productive route is that work requirements are not rigid and unchanging from job to job and over time. It is easier to set out general criteria for success than it is the specific educational attributes in a measurable form that will predict success. Thus, we know that years of education provide a much better prediction of earnings and occupational success than any specific attribute of education such as test scores or where one went to school. This is true, even after controlling for race, gender, geographic location, and parental socioeconomic status. There is something about educational attainment as a generic phenomenon in itself that seems to overwhelm the specifics. In my view, this accounts in large measure for the general failure of vocational education with its emphasis on specific skills to have much impact on the American educational system or the workplace. It is generic skills with face validity that are likely to be more valuable and that can be molded through training and job experience to the specific needs of different jobs, different workplaces, and different times as technology and products change over the lifetime of the worker.

An interesting illustration of this is found in the enormous success of foreign manufacturers in transplanting their operations to the U.S. Both German and Japanese firms were thought to be highly successful in Nation At Risk and other reports because of the quality of their educational systems and the resulting quality of their labor forces. Yet, when such Japanese firms as Honda, Toyota and Nissan established operations in the U.S., using local workers from areas hardly known for the quality of their education, they found that they could produce automobiles as efficiently and as high in quality as in Japan (e.g. see references in Levin and Kelley 1994). Perhaps even more challenging to the naïve view that high test scores and educational standards are the dominant determinant of workforce productivity, BMW and Mercedes have established plants in relatively rural areas of South Carolina and Alabama, respectively, two states at the bottom of the U.S. educational hierarchy in test scores and educational investment. Yet, both are expected to be highly profitable endeavors in both domestic and export markets including cars for the European market. Perhaps an advantage of the American workforce is its malleability rather than the specific skills that it embodies at a point in time.

What is probably more important is how these firms are organized and managed as well as their high capital investment, a good product, an efficient production process, and sufficient training of workers for their jobs (Levin and Kelley 1994). Organization and management place special emphasis on incentives for working productively in teams and for rewarding quality in production. Training is intensive and continuous, constantly updating the skills of workers, not only increasing the value of the worker to the firm, but increasing the attachment of the worker through job-specific skills that may not be directly transferable to other firms (Becker 1964; Ziderman 1978: Chap. 2).

SUMMARY

At the moment there are no specific educational standards that have high predictive validity with respect to economic productivity or the quality of the workforce, despite this being a major rationale for standards. At best, one might set out broad standards that have face validity with respect to the needs of future workers such as those set out by the Secretary's Commission on Achieving Necessary Skills (1991). These are also set out at a high degree of generality so that local decision-makers at school districts and school sites can develop their own approaches to meeting the standards. Further, firms can build training programs that will provide the specific skills that can capitalize on the more general foundation.

Finally, there is some danger if the charade of asserting that existing and emerging educational standards can predict worker productivity. For example, what if we set out a certification system at the local, state, or federal level that certifies for employers who meets the new standards, and employers are led to believe that such standards have been validated on worker productivity. Certainly, this is what the U.S. Employment Service attempted when it used GATB rank as a basis for recommending applicants to potential employers. If employers believe that there is validity to these systems of evaluation and measurement, they may desensitize employers to other measures that they use such as bio-data, interviews, and recommendations, criteria which are comparable to in their predictive ability and, probably superior when taken together. Given the low predictive validities of available measures, there is a potential for reducing national economic efficiency and fairness in employment selection, the precise opposite of what was intended.

References:

Becker, Gary (1964) Human Capital: A Theoretical and Empirical Analysis (New York: Columbia University Press).

Berlin, Gordon & Andrew Sum (1988) Toward a More Perfect Union: Basic Skills, Poor Families and Our Economic Future, Occasional Paper 3, Ford Foundation Project on Social Welfare and the American Future (New York: Ford Foundation).

Bishop, John (1989) "Incentives for Learning: Why American High School Students Compare Poorly to Their Counterparts Overseas." In Commission on Workforce Quality and Labor Market Efficiency, Investing in People, Background Papers, Vol. I (Washington, D. C.: U.S. Department of Labor), pp. 1-84.

Coleman, James and Thomas Hoffer (1987) Public and Private High Schools (New York: Basic Books).

Darling-Hammond, Linda (1994) "National Standards and Assessment: Will They Improve Education?" American Journal of Education, vol. 102, No. 4: pp. 478-510.

Hanushek, Eric A. with others (1994) Making Schools Work (Washington, D.C.: The Brookings Institution).

Hartigan, John A. and Alexandra K. Wigdor, eds. (1989) Fairness in Employment Testing: Validity Generalization, Minority Issues, and the General Aptitude Test Battery (Washington, D.C.: National Academy Press).

Hirsch, E. D., Jr. (1987) Cultural Literacy: What Every American Needs to Know (Boston: Houghton Mifflin).

Hopfenberg, Wendy, Henry M. Levin, Christopher Chase, Georgia Christensen, Melanie Moore, Pilar Soler, Ilse Brunner, Beth Keller, and Gloria Rodriguez (1993) The Accelerated Schools Resource Guide (San Francisco: Jossey-Bass).

Levin, Henry M. (1978) "Educational Performance Standards: Image or Substance?" Journal of Educational Measurement, Vol. 15, No. 4, Pp. 309-319.

_____ (1989) "Ability Testing for Job Selection: Are the Economic Claims Justified". In Bernard Gifford, ed., Test Policy and the Politics of Opportunity Allocation: The Workplace and the Law (Boston: Kluwer Academic Publishers), Pp. 211-32.

Levin, Henry M. and Carolyn Kelley (1994) "Can Education Do It Alone?" Economics of Education Review, Vol. 13, No. 2. Pp. 97-108.

Marshall, Ray and Marc Tucker (1992) Thinking for a Living (New York: Basic Books).

Murnane, Richard J., John B. Willett, and Frank Levy (1995) "The Growing Importance of Cognitive Skills in Wage Determination," Review of Economics and Statistics, Vol. 77, No. 2 . Pp. 251-66.

National Commission on Excellence in Education (1983) Nation at Risk (Washington, D.C.: U.S. Government Printing Office).

New Standards (1997a), Performance Standards: English Language Arts, Mathematics, Science, and Applied Learning, Vol. 1-Elementary School, Vol. 2-Middle School, Vol. 3-High School (Washington, D.C.: National Center on Education and the Economy).

New Standards (1997b), Performance Standards: English Language Arts, Mathematics, Science, and Applied Learning, Consultation Draft, Vol. 1-Elementary School, Vol. 2-Middle School, Vol. 3-High School (Washington, D.C.: National Center on Education and the Economy).

Pierce, Brooks and Finis Welch (1996) "Changes in the Structure of Wages," In Eric Hanushek and Dale Jorgenson, eds. Improving America's Schools (Washington, D.C.: National Academy Press).

Rumberger, Russell and Henry M. Levin (1989) "Schooling for the Modern Workplace," In Commission on Workforce Quality and Labor Market Efficiency, U.S. Department of Labor, Investing in People, Background Papers, vol. 1 (Washington, D.C.: U. S. Government Printing Office), pp. 85-144.

Schmitt, Neal, R. Z. Gooding, R. A. Noe, and M. Kirsch (1984) "Meta-analyses of Validity Studies Published Between 1964 and 1982 and the Investigation of Study Characteristics," Personnel Psychology, Vol. 37, Pp. 407-22.

Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor (1991), What Work Requires of Schools (Washington, D.C.: U.S. Department of Labor).

_____ (1992) Learning A Living: A Blueprint for High Performance—A SCANS Report for America 2000 (Washington, D.C.: U. S. Department of Labor).

Ziderman, Adrian (1978) Manpower Training: Theory and Policy, Macmillan Studies in Economics (London: Macmillan Press).